

Amendments to the Claims:

(1) Please withdraw claims 17-20 without prejudice or disclaimer of the subject matter thereof.

Listing of Claims:

Claim 1 (Previously presented): A method for cutting of transparent nonmetallic materials, said method comprising the steps of:

providing a cutting device comprising a laser system with pulse lamp pumping, an optical-mechanical direction and focusing system, a sample moving mechanism, a video control device, and a control and management electronic block;

directing a laser beam from the pulse laser using said optical-mechanical system; focusing of laser radiation on a surface of a sample using said optical-mechanical system;

forming defects by said laser radiation in a point of focus in the sample;

applying mechanical effort to a surface of the sample using said sample moving mechanism;

determining the size of the defects;

forming additional defects in the points of focus of the sample from each other at a distance determined by 50% of overlapping of the defects up to double the distance between the defects; and

forming a laser beam simultaneously with said step of forming additional defects with said laser beam having a density of energy on the surface of the sample that does not exceed a threshold of destruction of a semiconductor covering on the sample;

wherein the pulse laser radiation has a 10-100 ps duration and the energy is sufficient for formation of breakdown in a zone of focus, with length of a wave laying in the field of a transparency of a material.

Claim 2 (Previously presented): The method for cutting of transparent nonmetallic materials according to claim 1, wherein points of formation of defects are along a direction of polarization of laser radiation.

Claim 3 (Previously presented): The method for cutting of transparent nonmetallic materials according to claim 1, wherein said step of focusing said laser radiation is further characterized by said laser radiation being focused on a back wall of the sample and further comprising a step of additionally focusing said laser radiation in the sample perpendicularly and in parallel to the first layer of defects.

Claim 4 (Previously presented): The method for cutting of transparent nonmetallic materials according to claim 1, wherein said optical-mechanical direction and focusing system of said step of providing said cutting device includes collimating optics, a dichroic rotary mirror, and a focusing lens.

Claim 5 (Previously presented): The method according to claim 4, wherein said focusing lens is a double reflection crystal having two focal lengths allowing the laser radiation to be focused in different places on the height of the sample.

Claim 6 (Previously presented): The method according to claim 4, wherein said optical-mechanical direction and focusing system further comprising a half of a positive lens positioned between said collimating optics and said dichroic rotary mirror allowing the laser radiation to be focused in different places on the height of the sample.

Claim 7 (Previously presented): The method according to claim 4, wherein said focusing lens has a focal length of about 8-15 mm.

Claim 8 (Previously presented): The method according to claim 4, wherein said focusing lens being moveable in the vertical direction.

Claim 9 (Previously presented): The method according to claim 1 further comprising, before said step of directing said laser beam, the step of exposing said laser beam to a two-step compression by methods of Mandelshtam-Brillion induced scattering and Light-Induced Scattering.

Claim 10 (Previously presented): The method according to claim 9, wherein said laser beam is a ND:YAG laser having pulse duration of about 15-50 ps, a radiation wave length up to 1.2 microns, and a pulse energy up to 100 μ J.

Claim 11 (Previously presented): A method for cutting of transparent nonmetallic materials, said method comprising the steps of:

providing a cutting device comprising a laser system with pulse lamp pumping,
an optical-mechanical direction and focusing system, a sample moving

mechanism, a video control device, and a control and management electronic block;

exposing said a laser beam to a two-step compression by methods of Mandelsham-Brillion induced scattering and Light-Induced Scattering;

directing a laser beam from the pulse laser using said optical-mechanical system;

focusing of laser radiation near a back wall surface of a sample using said optical-mechanical system;

forming a first layer of defects by said laser radiation in a point of focus in the sample along a direction of polarization of laser radiation;

additionally focusing said laser radiation in the sample perpendicularly and in parallel to said first layer of defects;

applying mechanical effort to a surface of the sample using said sample moving mechanism;

determining the size of the defects;

forming additional defects in the points of focus of the sample from each other at a distance determined by 50% of overlapping of the defects up to double the distance between the defects; and

forming a laser beam simultaneously with said step of forming additional defects with said laser beam having a density of energy on the surface of the sample that does not exceed a threshold of destruction of a semiconductor covering on the sample;

wherein the pulse laser radiation has a 10-100 ps duration and the energy is sufficient for formation of breakdown in a zone of focus, with length of a wave laying in the field of a transparency of a material;

wherein said optical-mechanical direction and focusing system includes collimating optics, a dichroic rotary mirror, and a focusing lens.

Claim 12 (Previously presented): The method according to claim 11, wherein said optical-mechanical direction and focusing system further comprising a half of a positive lens positioned between said collimating optics and said dichroic rotary mirror allowing the laser radiation to be focused in different places on the height of the sample.

Claim 13 (Previously presented): The method according to claim 11, wherein said focusing lens has a focal length of about 8-15 mm.

Claim 14 (Previously presented): The method according to claim 11, wherein said focusing lens being moveable in the vertical direction.

Claim 15 (Previously presented): The method according to claim 11, wherein said laser beam is a ND:YAG laser having pulse duration of about 15-50 ps, a radiation wave length up to 1.2 microns, and a pulse energy up to 100 μ J.

Claim 16 (Previously presented): The method according to claim 11, wherein said focusing lens is a double reflection crystal having two focal lengths allowing the laser radiation to be focused in different places on the height of the sample.

Claim 17 (Withdrawn): A cutting device for cutting a transparent nonmetallic sample, said cutting device comprising:

- a laser system having pulse lamp pumping;
- an optical-mechanical direction and focusing system;
- a sample moving mechanism;
- a video control device; and
- a control and management electronic block.

Claim 18 (Withdrawn): The cutting device according to claim 17, wherein said optical-mechanical direction and focusing system comprises collimating optics, a dichroic rotary mirror, and a focusing lens, said dichroic rotary mirror being adapted to reflect said laser radiation from said collimating optics to said focusing lens, wherein said focusing lens being moveable in the vertical direction.

Claim 19 (Withdrawn): The cutting device according to claim 18, wherein said focusing lens is a double reflection crystal having two focal lengths allowing the laser radiation to be focused in different places on the height of the sample.

Claim 20 (Withdrawn): The cutting device according to claim 17, wherein said optical-mechanical direction and focusing system further comprising a half of a positive lens positioned between said collimating optics and said dichroic rotary mirror allowing the laser radiation to be focused in different places on the height of the sample.